Modern X86 Assembly Language Programming

Studierende der Informatik und der Ingenieurwissenschaften finden hier die zentralen Konzepte beim Aufbau und dem Entwurf von Rechnern ausführlich und mit vielen Beispielen erklärt. Das Buch bietet eine solide Grundlage für das Verständnis des Zusammenspiels zwischen Hardware und Software auf den unterschiedlichen Ebenen. Patterson/Hennessy deckt alle Themen zur Rechnerorganisation kompetent und aus einem Guss ab: beginnend mit dem Aufbau von Computern, einer Einführung in die Maschinensprache und die Rechnerarithmetik, über die Einflussfaktoren auf die Rechenleistung und den Entwurf von Steuerwerk und Datenpfad, bis hin zur Leistungssteigerung durch Nutzung von Pipelining und der Speicherhierarchie. Zwei Kapitel über Ein- und Ausgabesysteme sowie zu Multiprozessoren und Cluster-Computing runden das Werk ab. Herausragende Merkmale: - Grundlagen ergänzt durch Fallstudien aus der Praxis wie z.B. die Organisation aktueller Pentium-Implementierungen oder das PC-Cluster von Google - Kapitel 9 "Multiprozessoren und Cluster" exklusiv in der deutschen Ausgabe des Buchs - Glossar-Begriffe, Verständnisfragen, Hinweise auf Fallstricke und Fehlschlüsse, Zusammenfassungen zu allen Kapiteln -zweisprachiger Index Auf der CD-ROM: -> ergänzende und vertiefende Materialien im Umfang von ca. 350 Seiten: - vertiefende Abschnitte mit Fokus auf Hardware oder Software - Historische Perspektiven und Literaturhinweise zu allen Kapiteln - 4 Anhänge: A) Assemblers, Linkers, SPIM; B) The Basics of Logic Design; C) Mapping Control to Hardware; D) A Survey of RISC Architectures -> ca. 200 nicht in die deutsche Print-Ausgabe übernommene Aufgaben der englischsprachigen Print-Ausgabe -> ca. 180 Aufgaben zur Vertiefung inkl. Lösungen -> Werkzeuge mit Tutorien, z.B. SPIM, Icarus Verilog. Für Dozenten: Zugang zu Materialien aus der Original Instructor ́s Website: Lectures slides, Lecture Notes, Figures from the book, Solutions to all exercises
/*4204Q-9, 0-13-142044-5, Britton, Robert, MIPS Assembly Language Programming, 1/E*/" Users of this book will gain an understanding of the fundamental concepts of contemporary computer architecture, starting with a Reduced Instruction Set Computer (RISC). An understanding of computer architecture needs to begin with the basics of modern computer organization. The MIPS architecture embodies the fundamental design principles of all contemporary RISC architectures. This book provides an understanding of how the functional components of modern computers are put together and how a computer works at the machine-language level." Well-written and clearly organized, this book covers the basics of MIPS architecture, including algorithm development, number systems, function calls, reentrant functions, memory-mapped I/O, exceptions and interrupts, and floating-point instructions." For employees in the field of systems, systems development, systems analysis, and systems maintenance.
Exploring how concurrent programming can be assisted by language-level techniques, Introduction to Concurrency in Programming Languages presents high-level language techniques for dealing with concurrency in a general context. It provides an understanding of programming languages that offer concurrency features as part of the language definition. The book supplies a conceptual framework for different aspects of parallel algorithm design and implementation. It first addresses the limitations of traditional programming techniques and models when dealing with concurrency. The book then explores the current state of the art in concurrent programming and describes high-level language constructs for concurrency. It also discusses the historical evolution of hardware, corresponding high-level techniques that were developed, and the connection to modern systems, such as multicore and manycore processors. The remainder of the text focuses on common high-level programming techniques and their application to a range of algorithms. The authors offer case studies on genetic algorithms, fractal generation, cellular automata, game logic for solving Sudoku puzzles, pipelined algorithms, and more. Illustrating the effect of concurrency on programs written in familiar languages, this text focuses on novel language abstractions that truly bring concurrency into the language and aid analysis and compilation tools in generating efficient, correct programs. It also explains the complexity involved in taking advantage of concurrency with regard to program correctness and performance.

Computer Architecture for Scientists

strategische Wendepunkte vorzeitig erkennen

Modern Parallel Programming with C++ and Assembly Language

Assembly Language Step-by-Step

32-Bit, 64-Bit, Sse, and Avx

Modern Assembly Language Programming with the ARM Processor

Gain the fundamentals of Armv8-A 32-bit and 64-bit assembly language programming. This book emphasizes Armv8-A assembly language topics that are relevant to modern software development. It is designed to help you quickly understand Armv8-A assembly language programming and the computational resources of Arm ' s SIMD platform. It also contains an abundance of source code that is structured to accelerate learning and comprehension of essential Armv8-A assembly language constructs and SIMD programming concepts. After reading this book, you will be able to code performance-optimized functions and algorithms using Armv8- A 32-bit and 64-bit assembly language. Modern Arm Assembly Language Programming accentuates the coding of Armv8-A 32-bit and 64-bit assembly language functions that are callable from C++. Multiple chapters are also devoted to Armv8-A SIMD assembly language programming. These chapters discuss how to code functions that are used in computationally intense applications such as machine learning, image processing, audio and video encoding, and computer graphics. The source code examples were developed using the GNU toolchain (g++, gas, and make) and tested on a Raspberry Pi 4 Model B running Raspbian (32-bit) and Ubuntu Server (64-bit). It is important to note that this is a book about Armv8-A assembly language programming and not the Raspberry Pi. What You Will Learn See essential details about the Armv8-A 32-bit and 64-bit architectures including data types, general purpose registers, floating-point and SIMD registers, and addressing modes Use the Armv8-A 32-bit and 64-bit instruction sets to create performance-enhancing functions that are callable from C++ Employ Armv8-A assembly language to efficiently manipulate common data types and programming constructs including integers, arrays, matrices, and user-defined structures Create assembly language functions that perform scalar floating-point arithmetic using the Armv8-A 32-bit and 64-bit instruction sets Harness the Armv8-A SIMD instruction sets to significantly accelerate the performance of computationally intense algorithms in applications such as machine learning, image processing, computer graphics, mathematics, and statistics. Apply leading-edge coding strategies and techniques to optimally exploit the Armv8-A 32-bit and 64-bit instruction sets for maximum possible performance Who This Book Is For Software developers who are creating programs for Armv8-A platforms and want to learn how to code performance-

enhancing algorithms and functions using the Armv8-A 32-bit and 64-bit instruction sets. Readers should have previous high-level language programming experience and a basic understanding of C++.
Assembly language is as close to writing machine code as you can get without writing in pure hexadecimal. Since it is such a low-level language, it's not practical in all cases, but should definitely be considered when you're looking to maximize performance. With Assembly Language by Chris Rose, you'll learn how to write x64 assembly for modern CPUs, first by writing inline assembly for 32-bit applications, and then writing native assembly for C++ projects. You'll learn the basics of memory spaces, data segments, CISC instructions, SIMD instructions, and much more. Whether you're working with Intel, AMD, or VIA CPUs, you'll find this book a valuable starting point since many of the instructions are shared between processors.This updated and expanded second edition of Book provides a user-friendly introduction to the subject, Taking a clear structural framework, it guides the reader through the subject's core elements. A flowing writing style combines with the use of illustrations and diagrams throughout the text to ensure the reader understands even the most complex of concepts. This succinct and enlightening overview is a required reading for all those interested in the subject .We hope you find this book useful in shaping your future career & Business.
The dramatic increase in computer performance has been extraordinary, but not for all computations: it has key limits and structure. Software architects, developers, and even data scientists need to understand how exploit the fundamental structure of computer performance to harness it for future applications. Ideal for upper level undergraduates, Computer Architecture for Scientists covers four key pillars of computer performance and imparts a high-level basis for reasoning with and understanding these concepts: Small is fast – how size scaling drives performance; Implicit parallelism – how a sequential program can be executed faster with parallelism; Dynamic locality – skirting physical limits, by arranging data in a smaller space; Parallelism – increasing performance with teams of workers. These principles and models provide approachable high-level insights and quantitative modelling without distracting low-level detail. Finally, the text covers the GPU and machine-learning accelerators that have become increasingly important for mainstream applications.
Learn x86, ARM, and RISC-V architectures and the design of smartphones, PCs, and cloud servers
32-bit, 64-bit, SSE, and AVX
Covers x86 64-bit, AVX, AVX2, and AVX-512
Wie Google denkt, arbeitet und unser Leben verändert
Embedded Computing for High Performance
Nur die Paranoiden überleben
Die Elektrotechnik kann ganz schön kompliziert sein, allerdings nicht in diesem Buch. Michael Felleisen erklärt Ihnen einfach und verständlich was Sie zu diesem Thema als Student unbedingt wissen sollten. Von den einfachen Zusammenhängen des elektrischen Stromkreises, über das Ohm´sche Gesetz, bis hin zu den Besonderheiten des magnetischen Felds und den Grundlagen der Wechselstromtechnik ist alles vertreten. Schon bald werden Sie mit Schlagworten wie Widerstand, Kondensator, Kapazität, Spule und Induktion ganz selbstverständlich umgehen. Dank zahlreichen Beispielen und Schritt-für-Schritt-Rechnungen stellen auch schwierige Themengebiete kein Problem mehr für Sie dar. Die nächste Prüfung kann also kommen.
Elektrotechnik ohne Vorkenntnisse - Die Grundlagen innerhalb von 7 Tagen verstehen Würden Sie nicht auch gerne elektrische Schaltungen verstehen und die Grundlagen der Elektrotechnik anwenden können? Kein Problem - Mithilfe dieses Elektrotechnik-Einsteiger-Ratgebers gelingt es Ihnen innerhalb kürzester Zeit die grundlegenden Wirkungsweisen rund um elektrischen Strom, Spannung und Energie zu verstehen. Endlich begreifen Sie, wie Strom und Spannung zusammenhängen, was der Unterschied zwischen Leistung, Energie und Arbeit ist und welche elektrischen Bauteile wie und wofür eingesetzt werden. In diesem Band werden die Grundlagen der Gleichstromtechnik behandelt. Echte Praxisbeispiele und kleinere Übungen helfen parallel beim Verständnis. Mit Hilfe dieses Einsteiger-Ratgebers konnten bereits viele zufriedene Leser in die Materie einsteigen und ihre eigenen Fähigkeiten erweitern, überzeugen Sie sich selbst! Was das Buch beinhaltet: ★ Wiederholung der wichtigsten mathematischen und physikalischen Grundlagen ★ Vom Wasserkreislauf zum Stromkreis ★ Leistung, Strom, Spannung und Co erklärt ★ Elektromagnetismus: Ursache und Wirkung ★ Elektrischen Schaltpläne verstehen: Die richtige Notation und der korrekte Aufbau ★ Die Wichtigsten Bauteile: Widerstände, Kondensatoren und viele mehr! ★ Bonus: Praxisbeispiel eine reale Schaltung zum Nachbauen! Zögern Sie nicht länger, bestellen Sie jetzt den Ratgeber und verstehen Sie schon bald die Grundladen der Elektrotechnik!
Considered a standard industry resource, the Embedded Systems Handbook provided researchers and technicians with the authoritative information needed to launch a wealth of diverse applications, including those in automotive electronics, industrial automated systems, and building automation and control. Now a new resource is required to report on current developments and provide a technical reference for those looking to move the field forward yet again. Divided into two volumes to accommodate this growth, the Embedded Systems Handbook, Second Edition presents a comprehensive view on this area of computer engineering with a currently appropriate emphasis on developments in networking and applications. Those experts directly involved in the creation and evolution of the ideas and technologies presented offer tutorials, research surveys, and technology overviews that explore cutting-edge developments and deployments and identify potential trends. This first self-contained volume of the handbook, Embedded Systems Design and Verification, is divided into three sections. It begins with a brief introduction to embedded systems design and verification. It then provides a comprehensive overview of embedded processors and various aspects of system-on-chip and FPGA, as well as solutions to design challenges. The final section explores power-aware embedded computing, design issues specific to secure embedded systems, and web services for embedded devices. Those interested in taking their work

with embedded systems to the network level should complete their study with the second volume: Network Embedded Systems.

Die Google-Story

Expert-C-Programmierung

Linux-Kernel-Handbuch

Introduction to 80X86 Assembly Language and Computer Architecture

IBM und der Holocaust

Google Inside

A no-nonsense, practical guide to current and future processor and computer architectures that enables you to design computer systems and develop better software applications across a variety of domains Key Features • Understand digital circuitry through the study of transistors, logic gates, and sequential logic • Learn the architecture of x86, x64, ARM, and RISC-V processors, iPhones, and high-performance gaming PCs • Study the design principles underlying the domains of cybersecurity, bitcoin, and self-driving cars Book Description Are you a software developer, systems designer, or computer architecture student looking for a methodical introduction to digital device architectures, but are overwhelmed by the complexity of modern systems? This step-by-step guide will teach you how modern computer systems work with the help of practical examples and exercises. You'll gain insights into the internal behavior of processors down to the circuit level and will understand how the hardware executes code developed in high-level languages. This book will teach you the fundamentals of computer systems including transistors, logic gates, sequential logic, and instruction pipelines. You will learn details of modern processor architectures and instruction sets including x86, x64, ARM, and RISC-V. You will see how to implement a RISC-V processor in a low-cost FPGA board and write a quantum computing program and run it on an actual quantum computer. This edition has been updated to cover the architecture and design principles underlying the important domains of cybersecurity, blockchain and bitcoin mining, and self-driving vehicles. By the end of this book, you will have a thorough understanding of modern processors and computer architecture and the future directions these technologies are likely to take. What you will learn • Understand the fundamentals of transistor technology and digital circuits • Explore the concepts underlying pipelining and superscalar processing • Implement a complete RISC-V processor in a low-cost FPGA • Understand the technology used to implement virtual machines • Learn about security-critical computing applications like financial transaction processing • Get up to speed with blockchain and the hardware architectures used in bitcoin mining • Explore the capabilities of self-navigating vehicle computing architectures • Write a quantum computing program and run it on a real quantum computer Who this book is for This book is for software developers, computer engineering students, system designers, reverse engineers, and anyone looking to understand the architecture and design principles underlying modern computer systems: ranging from tiny, embedded devices to warehouse-size cloud server farms. A general understanding of computer processors is helpful but not required. Table of Contents • Introducing Computer Architecture • Digital Logic • Processor Elements • Computer System Components • Hardware-Software Interface • Specialized Computing Domains • Processor and Memory Architectures • Performance-Enhancing Techniques • Specialized Processor Extensions • Modern Processor Architectures and Instruction Sets • The RISC-V Architecture and Instruction Set • Processor Virtualization • Domain-Specific Computer Architectures • Cybersecurity and Confidential Computing Architectures • Blockchain and Bitcoin Mining Architectures • Self-Driving Vehicle Architectures • Quantum Computing and Other Future Directions in Computer Architectures • Appendix

The eagerly anticipated new edition of the bestselling introduction to x86 assembly language The long-awaited third edition of this bestselling introduction to assembly language has been completely rewritten to focus on 32-bit protected-mode Linux and the free NASM assembler. Assembly is the fundamental language bridging human ideas and the pure silicon hearts of computers, and popular author Jeff Dunteman retains his distinctive lighthearted style as he presents a step-by-step approach to this difficult technical discipline. He starts at the very beginning, explaining the basic ideas of programmable computing, the binary and hexadecimal number systems, the Intel x86 computer architecture, and the process of software development under Linux. From that foundation he systematically treats the x86 instruction set, memory addressing, procedures, macros, and interface to the C-language code libraries upon which Linux itself is built. Serves as an ideal introduction to x86 computing concepts, as demonstrated by the only language directly understood by the CPU itself Uses an approachable, conversational style that assumes no prior experience in programming of any kind Presents x86 architecture and assembly concepts through a cumulative tutorial approach that is ideal for self-paced instruction Focuses entirely on free, open-source software, including Ubuntu Linux, the NASM assembler, the Kate editor, and the Gdb/Insight debugger Includes an x86 instruction set reference for the most common machine instructions, specifically tailored for use by programming beginners Woven into the presentation are plenty of assembly code examples, plus practical tips on software design, coding, testing, and debugging, all using free, open-source software that may be downloaded without charge from the Internet.

Mit der deutschen Übersetzung zur fünfter Auflage des amerikanischen Klassikers Computer Organization and Design - The Hardware/Software Interface ist das Standardwerk zur Rechnerorganisation wieder auf dem neusten Stand - David A. Patterson und John L. Hennessy gewähren die gewohnten Einblicke in das Zusammenwirken von Hard- und Software, Leistungseinschätzungen und zahlreicher Rechnerkonzepte in einer Tiefe, die zusammen mit klarer Didaktik und einer eher lockeren Sprache den Erfolg dieses weltweit anerkannten Standardwerks begründen. Patterson und Hennessy achten darauf, nicht nur auf das "Wie" der dargestellten Konzepte, sondern auch auf ihr "Warum" einzugehen und zeigen damit Gründe für Veränderungen und neue Entwicklungen auf. Jedes

der Kapitel steht für einen deutlich umrissenen Teilbereich der Rechnerorganisation und ist jeweils gleich aufgebaut: Eine Einleitung, gefolgt von immer tiefgreifenderen Grundkonzepten mit steigernder Komplexität. Darauf eine aktuelle Fallstudie, "Fallstricke und Fehlschlüsse", Zusammenfassung und Schlussbetrachtung, historische Perspektiven und Literaturhinweise sowie Aufgaben. In der neuen Auflage sind die Inhalte in den Kapiteln 1-5 an vielen Stellen punktuell verbessert und aktualisiert, mit der Vorstellung neuerer Prozessoren worden, und der Kapitel 6... from Client to Cloud wurde stark überarbeitetUmfangreiches Zusatzmaterial (Werkzeuge mit Tutorien etc.) stehtOnline zur Verfügung.

Die Diktatur des schönen Scheins.

Die Kunst des Exploits

Programming Languages and Systems

Embedded Systems Handbook

The Art of 64-Bit Assembly, Volume 1

Programming with Linux

Wie Google denkt, arbeitet und unser Leben verändertAus dem Inhalt Die Suche nach Google Die Welt aus der Sicht von Google: Biografie einer Suchmaschine Googlenomics: Das Geheimnis des Internet-Profits Sei nicht böse: Wie die Google-Kultur entstand Googles Wolke: Aufbau von Datenzentren zur Speicherung aller jemals verfassten Werke Jenseits der eigenen Gefilde: Google-Telefone und Google-TV GuGe: Googles moralisches Dilemma in China Google.gov: Ist das, was für Google gut ist, auch gut für die Regierung und die Öffentlichkeit? Google in der Verfolgerrolle Steven Levy begleitet den Leser in die Google-Zentrale.Nur wenige Unternehmen waren jemals derart erfolgreich wie Google – das Unternehmen, das das Internet verändert hat und zu einem unentbehrlichen Teil unseres Lebens geworden ist. Der erfahrene Technikredakteur Steven Levy erhielt beispiellose Einblicke in das Unternehmen und begleitet den Leser in die Google-Zentrale, um ihm zu zeigen, wie Google arbeitet.Der Schlüssel zu Googles ErfolgNoch während ihres Studiums in Stanford gelang es den beiden Google-Gründern Larry Page und Sergey Brin, die Internet-Suche zu revolutionieren und daraufhin Milliarden mit Internet-Werbung zu verdienen. Dank dieses Goldesels konnte das Unternehmen enorm expandieren und weitere Projekte wie effizientere Datenzentren, Open-Source-Mobiltelefone, kostenlose Internet-Videos (YouTube), Cloud Computing und die Digitalisierung von Büchern in Angriff nehmen. Der Schlüssel zu Googles Erfolg in all diesen Bereichen ist, wie Levy enthüllt, ihr technischer Ansatz und ihre Orientierung an Internet-Werten wie Geschwindigkeit, Offenheit, Experimentierfreudigkeit und Risikobereitschaft.Verliert Google an Schwung?Aber hat Google vielleicht seinen innovativen Schwung verloren? In China ist es böse gescheitert. Levy enthüllt, wie Brin und Co. hinsichtlich der China-Strategie uneins waren und wie Google im Bereich der sozialen Netzwerke nun erstmals erfolgreichen Konkurrenten hinterherhetzt. Kann sich das Unternehmen mit seinem berühmten Motto, nicht böse sein zu wollen, weiterhin im Wettbewerb behaupten? Kein anderes Buch enthüllte jemals derart viele Google-Interna wie Levys Google Inside. Der Autor: Steven Levy berichtet seit mehr als einem Jahrzehnt über Google, anfangs als Chefredakteur für Newsweek und nun für Wired als leitender Journalist. Er hat auch über Apple (Insanely Great und The Perfect Thing) geschrieben und ist der Autor des Klassikers Hackers: Heroes of the Computer Revolution. Besuchen Sie den Autor unter www.StevenLevy.com. "Google kann man nicht verstehen", so Marissa Mayer, Vizepräsidentin von Google, "wenn man nicht weiß, dass Larry und Sergey Montessori-Kinder sind. Das ist in den beiden Persönlichkeiten wirklich tief verwurzelt: Mach etwas, weil es sinnvoll ist und nicht, weil irgendeine Autoritäts-person dir es gesagt hat. Diese Denkweise bestimmt bei Larry und Sergey letztlich die Heran-gehensweise an Probleme. Sie fragen immer, warum etwas so sein sollte." Aus Google Inside Eine aufschlussreiche Einführung in die Denkweise der hinter dem einflussreichsten Internet-Unternehmen der Welt stehenden Köpfe. Richard Waters, The Wall Street Journal Der Aufstieg von Google ist eine fesselnde Geschichte, die noch nie so umfassend erzählt wurde. Hiawatha Bray, The Boston Globe

This book constitutes the proceedings of the 15th Asian Symposium on Programming Languages and Systems, APLAS 2017, held in Suzhou, China, in November 2017. The 24 papers presented in this volume were carefully reviewed and selected from 56 submissions. They were organized in topical sections named: security; heap and equivalence reasoning; concurrency and verification; domain-specific languages; semantics; and numerical reasoning. The volume also contains two invited talks in full-paper length.

Programming Language Pragmatics, Fourth Edition, is the most comprehensive programming language textbook available today. It is distinguished and acclaimed for its integrated treatment of language design and implementation, with an emphasis on the fundamental tradeoffs that continue to drive software development. The book provides readers with a solid foundation in the syntax, semantics, and pragmatics of the full range of programming languages, from traditional languages like C to the latest in functional, scripting, and object-oriented programming. This fourth edition has been heavily revised throughout, with expanded coverage of type systems and functional programming, a unified treatment of polymorphism, highlights of the newest language standards, and examples featuring the ARM and x86 64-bit architectures. Updated coverage of the latest developments in programming language design, including C & C++11, Java 8, C# 5, Scala, Go, Swift, Python 3, and HTML 5 Updated treatment of functional programming, with extensive coverage of OCaml New chapters devoted to type systems and composite types Unified and updated treatment of polymorphism in all its forms New examples featuring the ARM and x86 64-bit architectures

Principles and Performance

Leitfaden zu Design und Implementierung von Kernel 2.6

Rechnerorganisation und -entwurf

Die Grundlagen innerhalb von 7 Tagen verstehen

Programming Language Pragmatics

Post-Silicon and Runtime Verification for Modern Processors

Embedded Computing for High Performance: Design Exploration and Customization Using High-level Compilation and Synthesis Tools provides a set of real-life example implementations that migrate traditional desktop systems to embedded systems. Working with popular hardware, including Xilinx and ARM, the book offers a comprehensive description of techniques for mapping computations expressed in programming languages such as C or MATLAB to high-performance embedded architectures consisting of

multiple CPUs, GPUs, and reconfigurable hardware (FPGAs). The authors demonstrate a domain-specific language (LARA) that facilitates retargeting to multiple computing systems using the same source code. In this way, users can decouple original application code from transformed code and enhance productivity and program portability. After reading this book, engineers will understand the processes, methodologies, and best practices needed for the development of applications for high-performance embedded computing systems. Focuses on maximizing performance while managing energy consumption in embedded systems Explains how to retarget code for heterogeneous systems with GPUs and FPGAs Demonstrates a domain-specific language that facilitates migrating and retargeting existing applications to modern systems Includes downloadable slides, tools, and tutorials

This updated and expanded second edition of the Modern X86 Assembly Language Programming: 32-bit, 64-bit, SSE, and AVX provides a user-friendly introduction to the subject Taking a clear structural framework, it guides the reader through the subject's core elements. A flowing writing style combines with the use of illustrations and diagrams throughout the text to ensure the reader understands even the most complex of concepts. This succinct and enlightening overview is a required reading for all those interested in the subject . We hope you find this book useful in shaping your future career & Business.

Gain the fundamentals of x86 64-bit assembly language programming and focus on the updated aspects of the x86 instruction set that are most relevant to application software development. This book covers topics including x86 64-bit programming and Advanced Vector Extensions (AVX) programming. The focus in this second edition is exclusively on 64-bit base programming architecture and AVX programming. Modern X86 Assembly Language Programming's structure and sample code are designed to help you quickly understand x86 assembly language programming and the computational capabilities of the x86 platform. After reading and using this book, you'll be able to code performance-enhancing functions and algorithms using x86 64-bit assembly language and the AVX, AVX2 and AVX-512 instruction set extensions. What You Will Learn Discover details of the x86 64-bit platform including its core architecture, data types, registers, memory addressing modes, and the basic instruction set Use the x86 64-bit instruction set to create performance-enhancing functions that are callable from a high-level language (C++) Employ x86 64-bit assembly language to efficiently manipulate common data types and programming constructs including integers, text strings, arrays, and structures Use the AVX instruction set to perform scalar floating-point arithmetic Exploit the AVX, AVX2, and AVX-512 instruction sets to significantly accelerate the performance of computationally-intense algorithms in problem domains such as image processing, computer graphics, mathematics, and statistics Apply various coding strategies and techniques to optimally exploit the x86 64-bit, AVX, AVX2, and AVX-512 instruction sets for maximum possible performance Who This Book Is For Software developers who want to learn how to write code using x86 64-bit assembly language. It's also ideal for software developers who already have a basic understanding of x86 32-bit or 64-bit assembly language programming and are interested in learning how to exploit the SIMD capabilities of AVX, AVX2 and AVX-512.

Wie grafische Oberfl ä chen die Computernutzer entm ü ndigen.

Frei wie in Freiheit

Modern Arm Assembly Language Programming

Rechnerorganisation und Rechnerentwurf

X86 SIMD Development Using AVX, AVX2, and AVX-512

Introduction to Concurrency in Programming Languages

Learn assembly language programming from an expert's decade-long experience About This Video Use Emu8086 to create assembly programs for the 8086 processor Communicate with a C program using assembly code Understand disassembly In Detail This course will teach you x86 assembly programming by taking you through how processors work and how machine-level coding is possible. The course is divided into two modules. The first module shows you how to use an emulator for the legacy Intel 8086 processor and explains what goes on under the hood. Once you've learned everything you need to know about the legacy 8086 processor and how to program it in the assembly language, you'll progress to the second module, which focuses on writing assembly code for the modern x86 processors. You'll understand how to write 32-bit programs for Windows machines and establish communication between your assembly code and a C program. Prior experience in the C programming language or, at the very least, some programming experience in another language is necessary to follow the concepts covered in the second module of this course.

With advice from the experts, a user-friendly, hands-on approach and a 16-page, full-colour insert, this book helps users better understand their PC, realise its potential, foresee possible problems, and make the right decisions.

Computer Architecture/Software Engineering

Hacking

Die Hardware/ Software-Schnittstelle

15th Asian Symposium, APLAS 2017, Suzhou, China, November 27-29, 2017, Proceedings

Rechnerarchitektur : Von der digitalen Logik zum Parallelrechner

Foundational Learning for New Programmers

X86 Assembly Language Programming Masters Course

A new assembly language programming book from a well-loved master. Art of 64-bit Assembly Language capitalizes on the long-lived success of Hyde's seminal The Art of Assembly Language. Randall Hyde's The Art of Assembly Language has been the go-to book for learning assembly language for decades. Hyde's latest work, Art of 64-bit Assembly Language is the 64-bit version of this popular text. This book guides you through the maze of assembly language programming by showing how to write assembly code that mimics operations in High-Level Languages. This leverages your HLL knowledge to rapidly understand x86-64 assembly language. This new work uses the Microsoft Macro Assembler (MASM), the most popular x86-64 assembler today. Hyde covers the standard integer set, as well as the x87 FPU, SIMD parallel instructions, SIMD scalar instructions (including high-performance floating-point instructions), and MASM's very powerful macro facilities. You'll learn in detail: how to implement high-level language data and control structures in assembly language; how to write parallel algorithms using the SIMD (single-instruction, multiple-data) instructions on the x86-64; and how to write stand alone assembly programs and assembly code to link with HLL code. You'll also learn how to optimize certain algorithms in assembly to produce faster code.

Understand .NET memory management internal workings, pitfalls, and techniques in order to effectively avoid a wide range of performance and scalability problems in your software. Despite automatic memory management in .NET, there are many advantages to be found in understanding how .NET memory works and how you can best write software that interacts with it efficiently and effectively. Pro .NET Memory Management is your comprehensive guide to writing better software by understanding and working with memory management in .NET. Thoroughly vetted by the .NET Team at Microsoft, this book contains 25 valuable troubleshooting scenarios designed to help diagnose challenging memory problems. Readers will also benefit from a multitude of .NET memory management “rules” to live by that introduce methods for writing memory-aware code and the means for avoiding common, destructive pitfalls. What You'll Learn Understand the theoretical underpinnings of automatic memory management Take a deep dive into every aspect of .NET memory management, including detailed coverage of garbage collection (GC) implementation, that would otherwise take years of experience to acquire Get practical advice on how this knowledge can be applied in real-world software development Use practical knowledge of tools related to .NET memory management to diagnose various memory-related issues Explore various aspects of advanced memory management, including use of Span and Memory types Who This Book Is For .NET developers, solution architects, and performance engineers

Learn the fundamentals of x86 Single instruction multiple data (SIMD) programming using C++ intrinsic functions and x86-64 assembly language. This book emphasizes x86 SIMD programming topics and technologies that are relevant to modern software development in applications which can exploit data level parallelism, important for the processing of big data, large batches of data and related important in data science and much more. Modern Parallel Programming with C++ and Assembly Language is an instructional text that explains x86 SIMD programming using both C++ and assembly language. The book’s content and organization are designed to help you quickly understand and exploit the SIMD capabilities of x86 processors. It also contains an abundance of source code that is structured to accelerate learning and comprehension of essential SIMD programming concepts and algorithms. After reading this book, you will be able to code performance-optimized AVX, AVX2, and AVX-512 algorithms using either C++ intrinsic functions or x86-64 assembly language. What You Will Learn Understand the essential details about x86 SIMD architectures and instruction sets including AVX, AVX2, and AVX-512. Master x86 SIMD data types, arithmetic instructions, and data management operations using both integer and floating-point operands. Code performance-enhancing functions and algorithms that fully exploit the SIMD capabilities of a modern x86 processor. Employ C++ intrinsic functions and x86-64 assembly language code to carry out arithmetic calculations using common programming constructs including arrays, matrices, and user-defined data structures. Harness the x86 SIMD instruction sets to significantly accelerate the performance of computationally intense algorithms in applications such as machine learning, image processing, computer graphics, statistics, and matrix arithmetic. Apply leading-edge coding strategies and techniques to optimally exploit the x86 SIMD instruction sets for maximum possible performance. Who This Book Is For Intermediate to advanced programmers/developers in general. Readers of this book should have previous programming experience with modern C++ (i.e., ANSI C++11 or later) and Assembly. Some familiarity with Microsoft’s Visual Studio or the GNU toolchain will be helpful. The target audience for Modern X86 SIMD Programming are experienced software developers, programmers and maybe some hobbyists.

MIPS Assembly Language Programming

Modern Computer Architecture and Organization

Die Hardware/Software-Schnittstelle

Modern X86 Assembly Language Programming

x86-64 Machine Organization and Programming

Grundkurs Compilerbau

Modern X86 Assembly Language Programming shows the fundamentals of x86 assembly language programming. It focuses on the aspects of the x86 instruction set that are most relevant to application software development. The book's structure and sample code are designed to help the reader quickly understand x86 assembly language programming and the computational capabilities of the x86 platform. Please note: Book appendixes can be downloaded here: http://www.apress.com/9781484200650 Major topics of the book include the following: 32-bit core architecture, data types, internal registers, memory addressing modes, and the basic instruction set X87 core architecture, register stack, special purpose registers, floating-point encodings, and instruction set MMX technology and instruction set Streaming SIMD extensions (SSE) and Advanced Vector Extensions (AVX) including internal registers, packed integer arithmetic, packed and scalar floating-point arithmetic, and associated instruction sets 64-bit core architecture, data types, internal registers, memory addressing modes, and the basic instruction set 64-bit extensions to SSE and AVX technologies X86 assembly language optimization strategies and techniques

Many programmers have limited effectiveness because they don't have a deep understanding of how their computer actually works under the

hood. In Learn to Program with Assembly, you will learn to program in assembly language - the language of the computer itself. Assembly language is often thought of as a difficult and arcane subject. However, author Jonathan Bartlett presents the material in a way that works just as well for first-time programmers as for long-time professionals. Whether this is your first programming book ever or you are a professional wanting to deepen your understanding of the computer you are working with, this book is for you. The book teaches 64-bit x86 assembly language running on the Linux operating system. However, even if you are not running Linux, a provided Docker image will allow you to use a Mac or Windows computer as well. The book starts with extremely simple programs to help you get your grounding, going steadily deeper with each chapter. At the end of the first section, you will be familiar with most of the basic instructions available on the processor that you will need for any task. The second part deals with interactions with the operating system. It shows how to make calls to the standard library, how to make direct system calls to the kernel, how to write your own library code, and how to work with memory. The third part shows how modern programming language features such as exception handling, object-oriented programming, and garbage collection work at the assembly language level. Additionally, the book comes with several appendices covering various topics such as running the debugger, vector processing, optimization principles, a list of common instructions, and other important subjects. This book is the 64-bit successor to Jonathan Bartlett's previous book, Programming from the Ground Up, which has been a programming classic for more than 15 years. This book covers similar ground but with modern 64-bit processors, and also includes a lot more information about how high level programming language features are implemented in assembly language. What You Will Learn How the processor operates How computers represent data internally How programs interact with the operating system How to write and use dynamic code libraries How high-level programming languages implement their features Who This Book Is ForAnyone who wants to know how their computer really works under the hood, including first time programmers, students, and professionals.

The purpose of this book is to survey the state of the art and evolving directions in post-silicon and runtime verification. The authors start by giving an overview of the state of the art in verification, particularly current post-silicon methodologies in use in the industry, both for the domain of processor pipeline design and for memory subsystems. They then dive into the presentation of several new post-silicon verification solutions aimed at boosting the verification coverage of modern processors, dedicating several chapters to this topic. The presentation of runtime verification solutions follows a similar approach. This is an area of processor design that is still in its early stages of exploration and that holds the promise of accomplishing the ultimate goal of achieving complete correctness guarantees for microprocessor-based computation. The authors conclude the book with a look towards the future of late-stage verification and its growing role in the processor life-cycle.

Elektrotechnik ohne Vorkenntnisse

For Better Code, Performance, and Scalability

Pro .NET Memory Management

Programmierung des 6502

Covers Armv8-A 32-bit, 64-bit, and SIMD

Learn to Program with Assembly

Modern Assembly Language Programming with the ARM Processor is a tutorial-based book on assembly language programming using the ARM processor. It presents the concepts of assembly language programming in different ways, slowly building from simple examples towards complex programming on bare-metal embedded systems. The ARM processor was chosen as it has fewer instructions and irregular addressing rules to learn than most other architectures, allowing more time to spend on teaching assembly language programming concepts and good programming practice. In this textbook, careful consideration is given to topics that students struggle to grasp, such as registers vs. memory and the relationship between pointers and addresses, recursion, and non-integral binary mathematics. A whole chapter is dedicated to structured programming principles. Concepts are illustrated and reinforced with a large number of tested and debugged assembly and C source listings. The book also covers advanced topics such as fixed and floating point mathematics, optimization, and the ARM VFP and NEONTM extensions. PowerPoint slides and a solutions manual are included. This book will appeal to professional embedded systems engineers, as well as computer engineering students taking a course in assembly language using the ARM processor. Concepts are illustrated and reinforced with a large number of tested and debugged assembly and C source listing Intended for use on very low-cost platforms, such as the Raspberry Pi or pcDuino, but with the support of a full Linux operating system and development tools Includes discussions of advanced topics, such as fixed and floating point mathematics, optimization, and the ARM VFP and NEON extensions

Embedded Systems Design and Verification

Elektrotechnik für Dummies
die Verstrickung des Weltkonzerns in die Verbrechen der Nazis
Efficient Mapping of Computations Using Customization, Code Transformations and Compilation
Peter Norton's Inside the PC